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An Important Literature.

THE admirable report of the Connecticut State Board of Agriculture for last year, which has just been received at this office, calls to mind the rapidity with which literature of this sort is accumulating. Many of these volumes contain papers of permanent value, prepared by experts in various lines of investigation, in all departments of practical agriculture, horticulture and forestry, and in the sciences related to them. Besides these, many of the states publish reports of horticultural societies, of experiment stations, of forestry meetings and of official entomologists and botanists. To these official documents issued by the state must be added the publications of viticultural associations and of a national association of horticulturists, one of nurserymen, another of florists, and another of seedsmen, not to mention the reports of the venerable American Pomological Society. In Wisconsin, where a thoroughly organized and competently conducted system of farmers' institutes is held every year, the cream of the discussions, covering the entire range of rural economy, is gathered into an interesting volume and issued at public expense. Every year the number of these publications increases, and they keep pace in quality with the advancing intelligence of their readers on all the subjects treated. Most of them are published in large editions, which are distributed gratuitously, so that almost any one who may desire to do so can collect a good-sized library on practical horticulture and agriculture at a trifling cost.

Of course the various papers in these publications are of unequal value, and the secretaries do not always edit them as carefully as they would if the books were sold on their merits. This means that much chaff is included with the wheat, and at times the reader grows weary, and wishes that the winnowing had been done for him. Very plainly the value of these official documents could be increased and their expense diminished if their contents were more carefully selected. This evil increases as the volumes multiply, and unless some heroic reform is soon begun, the articles of real value will be buried at last under such a mass of inferior matter that they will be practically lost. And this difficulty is increased by a lack of proper indexing. The compilers are not paid adequately for the work of careful editing and complete indexing, so that the student finds what he most wants only by laborious searching or by lucky accidents.

The increase of experiment stations under the law creating one in every state, and the fact that periodical bulletins are required from all of them under the statute, will swell the volume of this literature until it literally burdens the mails, inasmuch as it enjoys the rare privilege of being carried without postage. Perhaps the first freshet of these bulletins will have small value. Very little work of genuine worth can reasonably be expected of an experiment station before there has been time and adequate preparation for experiments. It may be added that little instruction can be looked for from these institutions unless they are officered and manned by skilled observers, trained to habitual accuracy. Indeed, it is not improbable that crude teachings, advanced with the presumption and assurance that always accompany superficial work, may in occasional instances do more harm than good. It is too evident that until there are in this country more men of scientific training who are available for work of this kind, the stations will be inefficiently conducted. It must be assumed, on the other hand, that the work, and as a consequence the publications of these stations, will rise in value until they contain each year a body of doctrine that cannot be neglected by students or by practical tillers of the soil. The obvious suggestion is that at some office of central authority these current reports should be collected, collated and classified. A periodical statement in condensed form of the conclusions reached at the various stations, if it were accurate and authoritative, could not fail of being useful. For popular reading it should be translated as far as possible into simple language and should be unencumbered with technical details; it should be edited and annotated in such a way that ordinary readers could distinguish and separate what had been actually proved from what was only probable or still in controversy, and the practical bearing of the scientific investigations recorded should be plainly set forth. At a meeting of representatives of the various agricultural colleges and experiment stations held last October, the necessity of some co-ordination of effort among these institutions appeared so evident, that a committee was appointed to consider this among other subjects; but so far as we are advised, no plan for editing the bulletins has been perfected.

The national Department of Agriculture is the natural place where a compilation of this kind should be prepared in connection with the work of its own divisions of chemistry, entomology, pomology, botany, forestry, and mycology. The Commissioner himself should be a man of recognized scientific attainment, or at least he should have such a known appreciation of the value of special training that he would be selected without question as the proper person to organize this bureau for gathering up the scattered and incomplete work of the state stations, for systematizing and unifying it, and for publishing its results in a coherent form. Unfortunately the men who have filled this office could not always be trusted to supervise a labor of this sort; but perhaps the influences which have impelled Congress to create the stations may avail to secure hereafter the selection of a chief who will be accepted by all as equal to every duty imposed upon him. Meanwhile the horticultural, agricultural and other reports are multiplying, and they already contain many papers that students would like to read if they only knew where to find them. Would it be a work unworthy of the Department to have made a full, topical index of all these reports up to date? It would seem that the stores of experience locked up in these volumes was worth enough to justify the trouble of providing a key. Such an index could not fail of being helpful to every one engaged in special research in any direction and in any portion of the field of agriculture, horticulture or forestry.

Balcony Flower Boxes.

A LARGE number of the dwelling-houses in our smaller towns stand far enough apart from one another and far enough back from the street to be encircled by small lawns, by trees and shrubs and flowers. If their owners do not always make the best possible use of the opportunities thus afforded them, still there are few cases in which some desire for beauty is not manifest; and the general aspect of streets composed of such houses is apt, at least, to be verdant and cheerful. But in every town which deserves the name—which is too large to be called a village—we find other streets where the houses stand so close together and so near the street, that, except as they may have yards lying in the rear, no space for gardening remains. The aspect of such streets as these is too commonly dreary and dull in the extreme. The architectural interest, or, at least, dignity, which the streets of a city may have is wanting; and, although a row of Maples may shade the sidewalk, there is nothing to show that the householder has any love for natural beauty or any wish to enliven the prospect for himself and his neighbors. Yet this householder is most often of the class which cannot seek beauty and refreshment by prolonged summer vacations in really rural spots. Winter and summer his home must be here, and it seems a double pity, therefore, that there should be so little to mark to his eyes the difference between the seasons. Surely something might be done to enliven such streets a little, and to give their occupants a small taste of the pleasure which their wealthier neighbors get from their lawns and shrubberies and flower beds.

The only available resource is the cultivation of plants in boxes. But simple and humble though it sounds, it is a resource in which lie possibilities of great improvement for such streets as we have in mind, and of much enjoyment for their dwellers. A few years ago a lady who had lived long in Germany, where the growing of plants in window-boxes is a widespread national custom, found herself established for the summer in the central house of a row of small, ugly wooden houses in a little town near New York. The front stoop descended to the sidewalk, and between the parlor windows and the front railing there was room for nothing more than a narrow balcony and an exiguous strip of grass. But before the summer was over this naked, unattractive house-front was blossoming like a bower. A few Roses had been planted in the narrow strip of grass, a few creepers beside the stoop; from the roof of the porch hung a great basket of trailing plants, and along the top of the balcony balustrade ran wide boxes filled with veritable little thickets of foliage and flowers. The cost had been almost nothing; the labor bestowed had been little indeed; but the result was charming, and the succeeding season bore good results. Not only had many neighbors followed the example thus set, but here and there all through the town could be seen attempts at imitation. Balconies were encircled with flowery boxes, window-sills were filled with them, and even the railings of long piazzas bore them too.

Boxes suitable for such purposes can be made at the most trifling expense of pine-wood, painted to correspond with the house. If the support on which they stand is narrow, additional space may be gained by flaring their sides. Holes for drainage should be pierced in their sides near the bottom, and they should have a layer of potsherds or small stones beneath the rich garden-earth with which they are filled. If the space exceeds five or six feet in length, it is better to use a succession of boxes instead of one long one, as then they may be more easily emptied and removed at the coming of winter, to be kept in a dry place until again required. Plant towards the front of the box such trailers and creepers as will grow to five or six feet, but not more, in length—German Ivy, for example, Tradescantia, Cypress-vine, and, among them plants of Lobelia, Mahernia and the pretty little Convolvulus which seedsmen call *C. minor*. And behind these, which after a very few weeks will form a deep curtain of waving green across the front of the balcony, plant what you will so long as it will not grow to too great a height nor form too solid a mass of color. What you want is not a mass of vivid Coleus nor of pink and red Geraniums, but a mass of green, with here and there a Geranium or Verbena, or a crimson Coleus and sparks and accents of all bright hues. Not only are the effects thus produced more beautiful, but the danger from thievish boys is less than when a mass of easily picked large flowers attracts their fingers.

Many of the most desirable plants for this purpose can be grown from seed, and the others can be very cheaply bought in pots. The care they require will not extend beyond a gradual thinning out as growth progresses, a little attention to the direction of the trailing shoots, a constant removal of faded flowers, and a daily watering—all of which can be done at odd moments, and with none of the fatigue that attends stooping over garden-beds. For this last reason the cultivation of such tiny box-gardens should be especially attractive to invalids and elderly persons, while the beauty they may be made to yield will be doubly valued for being constantly under the eye of those whom household cares keep much within walls.

An appropriation for the establishment and maintenance of a Forestry Station at Dodge City, on the Arkansas River, in the extreme south-western part of Kansas, was made by the last Legislature of that State. Mr. George V. Bartlett, of Ohio, has been appointed director of the Station. Fifty acres of ground, previously prepared by a season's cultivation, has already been planted with the seeds of a great variety of trees, and large numbers of forest and fruit trees have been planted. The results of such experiments, if properly conducted, made in a region where the annual rainfall is insufficient to secure a natural growth of trees, cannot fail to be interesting and valuable. If trees can be made to flourish permanently at Dodge City, without the aid of irrigation, the important facts will be demonstrated that cultivation can be depended on to take, to a certain extent, the place of rain, and that trees, if properly cared for, can be induced to grow in regions which are naturally treeless, owing to natural conditions unfavorable to tree growth. On the other hand, if the trees planted at Dodge City are unable to support the aridity of the Plains, these experiments should go far to prove that a large part of the naturally treeless region in the interior of this Continent must, even under favorable conditions of cultivation, remain forever treeless. Mr. Bartlett has a problem to solve of great public importance, and the results of his experiments will be watched with interest.

Climate of the Prairies.

IN a paper read before the American Pomological Society at Grand Rapids, Michigan, on "Hard Problems in Pomology," I said: "Year after year since 1856–7 our lists of fruits, shrubs and trees for general culture have been revised by the active horticultural societies of the Prairie-States, yet to-day the northern half of Iowa and Illinois, and the southern half of Minnesota and Wisconsin, can show more dead or crippled trees and shrubs than has been known in the world's history at any one time."

The real causes of this general wreck of trees and shrubs listed as "hardy" east of the lakes do not seem to be well understood. The common impression at the east seems to be that our orchard troubles are caused by winters far more severe than are known in any part of New York.

In reality our mid-continental extremes of heat and moisture of air during summer and autumn have most to do with the health and longevity of our ligneous plants. When our first settlers built their cabins on the borders of our isolated groves and river timber-belts, they could not fail to notice the absence of the Mosses, the Laurels, the Rhododendrons, the Conifers, and the plants generally of

more humid and equable climates, and they soon learned that our extremes of moisture and temperature presented new problems in plant and tree culture.

As early as 1856–7 the stories of dead and dying trees were told over a large part of the west, but a careful comparison of notes will show that many varieties of the orchard-fruits, and of ornamental trees and shrubs, which endured perfectly the extremes of rainfall and of atmospheric changes in the early days, are now placed in the tender list. The reasons for this apparent increase of climatic rigors of which our early settlers complained is beyond all doubt due to changes wrought by man.

As stated by Bryant in his work on Forest Trees, the primitive prairies were covered with so dense a growth of grass, that on the lower levels it could be tied over the head of a man sitting on horseback, while sloughs, marshes and drainage-centres were clogged, and the primitive timber of the streams presented real forest conditions. The whole country was in condition to hold the June rains and give them off gradually to the summer air.

At that time we were subject to variations of rainfall ranging from 74½ inches in 1851, to 23½ inches in 1854, but the prevailing westerly winds of such dry seasons as that of 1854 were never known to "fire" the blades of corn, to curl and burn the leaves of fruit trees, or to prevent the deposit of copious dews at night, as they passed over a vast stretch of clothed plain that modified the intensity of their heat, and left a part of the moisture they contained.

Since that time man has wrought changes in the whole aspect of the country.

A section large enough to make several such kingdoms as are found in western Europe has been turned with the plow, the surfaces of sloughs and marshes have been bared by clearing away the timber and hardened by drainage. During the droughts of 1886 and 1887, our prevailing winds from the west and south-west during the growing season have passed over a relatively dry, heated plain which has drank up their moisture with avidity and raised their temperature to a degree not known thirty years ago.

Possibly these climatic evils, as Bryant says, may be "mitigated and perhaps wholly removed by planting a due proportion of the country to forest trees," but in the meantime we cannot wonder that we cannot grow some of the field crops and many of the varieties and species of trees and shrubs that thrived with us thirty years ago. Yet eastern readers must not get the impression that we have an approach to desert conditions. The extreme seasons we speak of, with light rainfall, extreme heat and aridity of air, followed by cold dry winters, that are so fatal to the larger part of the orchard fruits, ornamental trees and shrubs grown at the east, visit us at rare intervals and do not materially affect our agricultural interests when the general results of periods of from five to ten years are considered.

And even these extreme years permit almost perfect success in growing the small fruits, the grapes, our native plums, and such orchard-fruits as can endure the extremes of heat, aridity, and temperature of our summer and winter climate, as well as our native forest trees.

We succeed with the small fruits, the grape and the plum because they are native to our soil and climate. We fail to grow successfully the small fruits, grapes, apples, pears, cherries, forest trees, ornamental trees, shrubs, etc., of western Europe, and their seedlings originated in the States east of us, for the reason that in leaf, bark, and character of cell structure of wood they do not meet our climatic requirements.

But all this does not prove that in due time we shall not conquer the situation by the introduction of the orchard fruits of climates similar to our own.

We have already a great number of varieties that stand every extreme as well as our Box Elder. If with farther trial they do not come up to our standard of excellence in quality, we can rapidly change them by crossing and by selection. We may not materially modify our climate, but we can and shall adapt plants and trees to it as has been done in similar climates of the old world. At another time I will attempt to give some of the peculiarities of leaf, bud, bark and wood, of the ligneous plants that bid defiance to prairie-winds and weather. *J. L. Budd.*

Fungus Diseases of Insects.

IF the subject of injuries done by insects to plants of various kinds is of interest to horticulturists, it is, as a matter of course, interesting to know about the fungus parasites which destroy the insects themselves. Every one has noticed the white fungus which attacks and kills large numbers of house-flies in the summer and autumn. A good deal has been written on this fungus in a popular way, and its specific name, *Empusa muscæ*, is probably not unfamiliar to many of our readers. The species belongs to the order *Entomophthoreæ*, which has been but little studied in this country, and an admirable monograph on the subject, by Mr. Roland Thaxter, published in the Memoirs of the Boston Society of Natural History, contains a great many facts of interest even to those who are not in the strict sense botanists.

Only three species of *Empusa* had been known hitherto in the United States: *Empusa Muscæ*, which kills house-flies; *E. Grylli*, which causes epidemics in grasshoppers; and *E. sphærosperma*, on the clover-leaf weevil. Mr. Thaxter describes 26 species of *Empusa* in the United States, 15 of which are new to science, and, so far as yet known, peculiar to this country, and 8 which occur in Europe, but not before recognized here. The insects attacked were species of several orders, flies, gnats and other *Diptera* being most frequently, and *Neuroptera* (dragon-flies) the least frequently affected. Besides the species of *Empusa*, Mr. Thaxter gives descriptions of a related form previously known on the seventeen-year locust, and a curious form on the excrement of frogs, not before found in this country.

The *Empusæ* have two forms of reproductive bodies, some found on the surface of the insects attacked and others in their internal organs. The nature of the latter has not been very well understood, but the facts stated by Mr. Thaxter form an important supplement to what has previously been written on this point, and it is now plain that this group of insectivorous fungi should be classed not with the white moulds which produce disease in fishes, such as the salmon mould, but rather with the common moulds which flourish on various articles of food in all houses. The discovery of so large a number of fungi of the genus *Empusa* which attack a surprisingly large number of species of insects, and the accurate knowledge of their habits and mode of reproduction, recently obtained, would lead us to believe that, at no very distant day, it may perhaps be possible to check the increase of some injurious insects by artificial propagation of the *Empusa* which prey upon them, and, under suitable conditions, destroy them.

W. G. Farlow.

Foreign Correspondence.

London Letter.

THE most valuable Orchid which received a certificate at an April meeting of the Royal Horticultural Society, was a variety of *Odontoglossum crispum*, from Mr. Charlesworth, an importer at Bradford. It has very large and finely shaped flowers, the petals and sepals exquisitely crisped and almost wholly covered with bright reddish brown blotches. It is the finest variety that has been exhibited this year, and will take equal rank with *Veitchianum*, *Sanderianum* and others. It is known as Charlesworth's variety. An Orchid somewhat similar to the striking *Odontoglossum Rossii*, var. F. L. Ames, already described, is *O. Humeanum*. It is supposed to be a natural hybrid between *O. cordatum* and

O. Rossii, and was considered worthy of a certificate, inasmuch as it is pretty and distinct from other varieties. It does not differ much in growth from the typical *O. Rossii*, but the form of the flowers and their color is different, the lateral sepals being a pale lemon yellow, with reddish brown blotches at the base, the other sepals coffee-brown, the lip pale yellow, crest yellow, and column purple. It is a good deal like one called *O. aspersum*, and, in fact, may prove identical with it. Though not a new Orchid, *Angræcum arcuatum* received a certificate, apparently because of its rarity. It cannot be called a first-rate Orchid, many species of *Angræcum* being much more showy. Its flowers are white, borne in short spikes and sweetly scented. It is quite a specialist's plant, and certainly did not merit a certificate in comparison with the others shown. The greatest novelty among Cattleyas that has been seen this year is a form of *C. Trianæ* named *Courtauldiana*. It is a good deal in the way of Backhouse's variety, but more remarkable. The flowers are above the average size and of good form. The sepals and petals are pale pink, heavily barred with the richest carmine crimson down the centre of each petal; but the bars are made up of freckles and spots, and not of one heavy dash, as in Backhouse's variety. The lip, too, is very rich in color, so that altogether it is a remarkably showy Orchid. It cropped up out of an importation and was first exhibited by Mr. Courtauld (an Orchid grower in Essex) at the great international show at Ghent. Orchid novelties just now are not as plentiful as they have been. The chief demand is for new Cypripediums and every nurseryman is searching for them. I lately saw a handsome new hybrid in Sanders' nursery named *C. Lemoinierii*, which may be best described as bearing resemblance to *C. caturum*, also a hybrid of the *Sedeni* type. But *C. Lemoinierii* is a much finer plant, more vigorous in growth, with larger flowers and more richly colored, the tints being of a bright reddish pink. This, too, was exhibited in Ghent, and was the admiration of the Continental Orchidists, who are also infected with the Cypripedium mania.

London, April 22d. *Wm. Goldring.*

A Garden in Shanghai.

IN this place it is an easy task to transform a flat, dreary-looking piece of ground into a flourishing garden filled with a great variety of flowering shrubs. The country for miles around has been made by the silting up of the Yangtzse River. About three hundred years ago the sea washed against the walled city of Quinsan, which is now thirty miles inland from here, rising from the plain like a miniature mountain, topped by its picturesque pagoda and left far away from any intercourse with foreign civilization. The alluvial plain for one hundred and fifty miles about Shanghai formed from the siltings from the Yangtzse River gives strong nourishment to all shrubs and other plants; the dampness and great heat act as a forcing-house, and they grow as if by magic.

Before beginning to plant a garden the land must be raised several feet by making artificial ponds, the excavated earth serving as an excellent fertilizer, and around the ponds there is room for landscape gardening in miniature. At a short distance out in the country good grass sods (of a species of *Poa*) are found, and these, well laid in November, will give a beautiful lawn the following summer, if rolled and cut once a week, always leaving the cuttings, which serve the two-fold purpose of protecting the roots from the sun and of enriching the ground. Special care must be taken to keep out the Bamboo Grass and Clover, both of which grow rapidly and soon kill out the grass; but the expense of doing this is moderate, as small coolies are to be had for fifty or one hundred cash a day, the equivalent of five or ten cents.

The approach to our garden is through a pretty lane bordered on either side by *Ligustrum lucidum*, real Privet, which makes with its deep green leaves a good hedge, if constantly clipped, otherwise it grows into small trees from fifteen to eighteen feet high, which when in flower fill the air with a heavy, sickening odor. The entrance is through an archway made by two old Willows, whose lopped branches serve as a trellis-work about which a Wistaria winds itself with a python-like embrace, and every spring sheds a lilac-colored veil over these skeleton trees. Such is the profusion of the flowers, that in time the weight of the creeper will break down the tree.

Near by are Locusts from seeds sent more than twenty years ago from the United States. They have flourished well. In spring the trees are bent with the graceful clusters of white flowers.

Stiff Yuccas growing in clusters from the same stem; fan-shaped Palms (*Chamærops humilis*); Bananas, not strong enough to bear the hard frosts without a straw covering; Cannas, which make themselves comfortably warm underground and spring up fresh every year—all these, with a background of *Pittosporum Tobira* and *Ilex cornuta* or Chinese Holly, with its horn-shaped leaves, give a variety of green coloring most restful to the eye during the blazing heat of summer.

The so-called Rose of Sharon (*Hypericum calycinum*) grows in profusion, covered with golden blossoms, and close at hand are several varieties of Gardenia, loading the air with strong perfume from their pure white flowers. English Ivy, Japanese Honeysuckle, Clematis (commonly called Passion-flower), *Bignonia Sinensis*, and several Roses, among them the Banksia, introduced into England from China many years ago, the Gloire de Dijon and Yellow Tea, are among the hardy creepers, but the lovely Moon-plant, a kind of exaggerated Convolvulus, with its perfect white disk-shaped flowers, droops at the earliest frost. Its seeds must be sown in March, and the seedlings kept under glass until June, for it belongs to the tropics. On first flowering, the long, spiral buds unfold as the sun goes down, closing before sun-rise and ending their ephemeral existence; later on, as the days become shorter and cooler, the flowers keep open during the morning.

Skirting the lawn are fine Fir trees, and the Cypress, always graceful, whether in the russet coloring of winter or when the soft spring air is calling forth its young, light green tips. The Tallow tree (*Stillingia sebifera*) colors its heart-shaped leaves with bright tints in autumn, and these, with the golden tones of the *Salisburia adiantifolia*, or Ginkgo tree, give a slight suggestion of New England October scenery. However, this home-dream vanishes as the eye falls on a cluster of feathery Bamboos, on the Fragrant Olive the Kwei-hua of the Chinese, and on the *Eriobotrya Japonica* or Loquat, with wool-covered flowers, made lovely only when the branches are bending with clusters of yellow fruit. These shrubs are over-topped by the *Melia Azedarach*, a good-sized tree, commonly called the Pride of India, which has fine heliotrope-colored blossoms in clusters. Below this is the *Magnolia grandiflora*. Much more stately and far prouder it looks with its glossy dark leaves and rich, large, creamy flowers.

On one side of the pond is a tangled copse filled with Privet (*Nandina domestica*), Rose of Sharon, Pittosporum, Palms and Bamboos, of which last there are sixty-three chief varieties in China. They are more valuable to her than her mines, and yield, next to rice and silk, the largest revenue.

There is no month in the year when some shrub may not be found in flower; for, although the range of the thermometer is great, reaching the high nineties in July and August, and falling to twenty-two and lower, often giving twelve degrees of frost, Fahrenheit, for several days at a time, still the cold is soon tempered by the force of the sun, which has been known to produce sunstroke in February; a rare occurrence, however. During the early winter months, large feathery branches of the Heavenly Bamboo, with brilliant bunches of scarlet berries drooping from the slender stems, are hawked about the streets. These are followed by Cherry and Almond blossoms. The Edgeworthia or Yellow Daphne decks its stiff, bare, brown stalks with soft yellow flowers before the frost has gone, and as the spring comes forward the *Magnolias* burst into bloom.

Photina serrulata, with its young red leaf-buds unfolding from amid the old, dark, evergreen leaves, gives the effect, at a distance, of a flowering shrub. *Daphne odora*, brought here from the hills at Ningpo many miles to the south, flourishes well, but must be protected from the scorching summer sun, as well as from the strong north-west winds. This is easily done by planting it on a bank which faces east and amid taller shrubs and trees. The flowers of the Peach, of the great Magnolia, of Althœa, and of the Albizzia, with fluffy pink blossoms, follow in quick succession; and before these have faded Gardenias and the Fragrant Olive are in bloom. After which winter is approaching, and again the *Nandina domestica* is to be seen.

Tulips, Hyacinths, Sweet Peas, Mignonette, Pansies, Salvias, Hollyhocks, Sunflowers, Zinnias, Canterbury Bells, Nasturtiums, Phlox—in fact, all garden flowers from the United States and Europe—have been introduced; many, however, must be treated in rather a reverse method from that usually employed on the other side of the planet.

Tulip and Hyacinth bulbs should be planted in October, and not left in the ground later than June, otherwise the rain and heat will rot them. Sweet Peas thrive best in large tubs, the seeds sown in September for spring flowering. The seeds of Canterbury Bells sown in the spring make a few leaves during the first summer; afterwards they may be transplanted in the autumn, and the following spring they are in perfection.

Mignonette does better in pots, although it will flower for a short time in the open before the damp heat comes.

The glaring red Salvia is well suited to endure the summer heat. This, planted out in the spring, comes to its greatest beauty in October, notwithstanding it had been in flower throughout the summer.

Each year new flowers are to be found in the different gardens; but the great question is, what will best stand the mid-summer heat on this alluvial plain?

My experience shows that different varieties of Japanese Lilies are more satisfactory, and are grown with less trouble than other flowers during the damp heat of June, July, August and September, giving a succession of flowers during these months.

Shanghai, February, 1888. *J. E. L.*

New or Little Known Plants.

Heliconia Choconiana.*

IN discussing a proposed trip to Guatemala in the spring of 1885 I was told of wild Bananas and wild Pine-apples as growing in the forests of that region, and I was curious to learn what they might in reality be. The true Pineapple is indeed found there growing by the roadsides and in fence-corners, where the discarded crowns of devoured pines have taken root, and do their poor best to bear fruit again. But the so-called wild Pineapple I found to be the *Bromelia Pinguin*, which is planted for hedges and bears an edible berry. The "Bananas" were all species of *Heliconia*, of which I saw a considerable number growing on river banks, and in other damp places. Some were chiefly notable for their conspicuous inflorescence, formed of large brightly-colored bracts in close double ranks and enclosing the clustered flowers. Others were taller, with very large leaves and a decidedly Banana-like habit, but their resemblance to the Banana goes no farther and the fruit is never eatable.

Several of these were common on the banks of the Chocon River, but that which pleased me most was one with numerous smaller, bright green, and glossy leaves, which I discovered in a deluge of rain, and of which I afterwards secured the roots. This has recently bloomed in Cambridge, and appears to be a previously unknown species. The top of a stem and a single leaf of the natural size are here figured. (See page 162.) The clustered stems grow to a height of three or four feet, and are covered with the sheathing petioles of the apparently sessile leaves. The inflorescence is nearly sessile at the summit, declined, and consists of about half a dozen large, scarlet bracts, each enclosing a fascicle of long, pale yellow flowers. The segments of the triangular perianth are mostly coherent, only one of the sepals separating sufficiently to set free the anthers and the style. The fruit is about the size of a pea, roundish and truncate, three-celled and three-seeded, but indehiscent. *S. W.*

* HELICONIA CHOCONIANA, Watson, Proc. Am. Acad., xxiii. 284. Glabrous throughout, the stems sheathed with numerous leaves; blades of the leaves sessile on the sheaths, narrowly oblong-lanceolate, six to ten inches long by two wide, acuminate, shining; inflorescence deflexed, shortly pedunculate; spathes scarlet, lanceolate, two inches long, the lower empty and leafy tipped; flowers yellowish, equalling the spathes, the lower sepal free, the lateral connate with the petals; sterile stamen short, ovate, abruptly acuminate.

Cultural Department.

A List of Roses.

FOR those who care to cultivate but a few Roses and are not familiar with the many varieties now offered, the list below is given as embracing the best of the several types in commerce to-day. Of course there are many more varieties of almost equal merit which could be added to this list, but the difference between many of them is so slight that only an expert could distinguish them when blooming together. Those enumerated below are all distinct representative Roses. All are fragrant and all are more or less continuous bloomers, for while among those classified here as hardy the Hybrid Perpetuals are not strictly speaking continuous bloomers, yet with liberal treatment, as described in the last issue, they will reward the owner with some fine flowers at intervals all summer. Those described as tender—including types of Tea, China and Bourbon Roses—will, if carefully attended to, give flowers the whole summer from June till late October in the latitude of New York, and in all sections south of that line. In more northern parts of the country the season is somewhat shorter.

Do not be induced to try small plants if you want them to bloom in the open air the first season. For this purpose only good fair-sized plants can be depended upon. Many lovers of Roses have been discouraged because this precaution was neglected. It is a waste of money to buy cheap, small plants. By the time such plants have fairly started to grow October, and frosty weather overtake them, and a very few flowers of poor quality is the only reward for a summer's work and waiting. Procure strong plants and on their own roots if possible. Budded plants often throw up suckers from below, and the inexperienced are in many cases not able to detect the difference between the two until the finer kind is weakened and ruined by the more robust growth from the stock.

The following are hardy:

WHITE.—Coquette des Blanches, Columbia (new).

PALE SHADED PINK.—La France, Madlle. Eugène Verdier, Queen of Queens.

CLEAR PINK.—Madame Gabriel Luizet, Mrs. John Laing.

ROSE COLOR.—Anna de Diesbach, John Hopper.

BRIGHT RED.—General Jacqueminot, Ulrich Brünner.

DEEP VELVETY RED.—La Roserie, Jean Liabaud.

Of tender varieties, the following stand our trying summers remarkably well and give as much satisfaction as any I have tried.

WHITE OR FLESH COLOR.—Madame Joseph Schwartz, Marie Guillot, Malmaison.

YELLOW.—Coquette de Lyon, Etoile de Lyon.

PINK, OF VARIOUS SHADES.—Marquis de Vivens, Grace Darling, Edmund de Biazant, Duchess de Brabant (improved).

RED OF DIFFERENT SHADES.—Meteor, Queen of Bedders, Queen's Scarlet or Aggripina, Pierre Guillot.

Summit, N. J. *John N. May.*

Polyanthuses.

THESE are variously colored florist's flowers that bloom in loose umbelled heads, and with flowers of all shades of white, yellow, rose, purple, maroon and crimson. While they can be grown successfully as hardy border-plants by protecting them with a light covering of evergreen branches or forest leaves in winter, it is only when treated in winter as cold-frame plants that they can be reasonably expected to flower in profusion and perfection from March till the end of May. They are useful as cut flowers in the same way as Pansies or Forget-me-nots, and they always appear more attractive when their own leaves are used as the green accompanying them.

They are true perennials, and in order to perpetuate special varieties we must treat them as perennials and increase them by division. A common way of treating them is to lift, divide and replant in some cool, moist spot out-of-doors as soon as they have done blooming, leaving them there till next fall, when they can again be lifted and replanted in cold-frames. But this is bad practice in one particular. I always have had the best success with Polyanthuses when divided in fall, and not in early summer.

Still, we now get such splendid varieties from seed, and so easily, except in the case of uncommonly choice sorts, that it is hardly worth while to bother with them as perennials, and it is better to treat them as annuals. Seeds sown now, or any time before August, should give capital plants for blooming next spring.

There are two distinct kinds of Polyanthuses—namely, the gold-laced, and the large-flowered, showy varieties. The gold-laced are beautiful flowers, with dark, velvety brown, maroon or crimson blossoms, whose petals are richly bordered with a distinct golden edging. The large-flowered varieties are the most robust, profuse, showy and useful, and include all the shades of white, yellow, rose-purple and crimson found in the race, and from a packet of choicest mixed seed we may get some of each sort. But as mixed seed does not give the best quality of flowers, it is better to buy the colors separately, say

a packet of white, one of yellow, one of dark crimson and one of spotted. This gives us a fine assortment, and among hundreds of plants, especially of the dark-colored ones, barely two are alike. Never buy inferior seeds, no matter how cheap they may be. If your object is to have fine flowers pay a good price for seed, and get the very best obtainable. The care in sowing, growing, wintering and blooming poor Polyanthuses is just as great as that required with the very choicest strain.

Sow Polyanthuses in boxes in a warm green-house in March or April; when they are up nicely prick them off into other flats, and about the end of April remove these to a cold-frame. After spring planting is over, say early in June, replant them into other boxes, and summer these in a cool, somewhat shady, place, or transplant at once into a cold-frame, and shade with lath shading. But it is better to delay planting into frames until August, as the crowns are apt to grow too large to admit of blooming them at the regular distance—nine inches apart. And it is only as a matter of practical convenience that they are sown in spring; it is better to sow in June, and from the time the seedlings come up till winter sets in to keep them in active growth. They make just as good blooming plants for next spring as do earlier sown seed, and they escape red spider, the inveterate enemy of old plants in summer.

Fig. 31.—Heliconia Choconiana.

Polyanthuses love a rich, friable, loamy soil, with a free supply of rotted cow manure, and during their whole life they should be liberally watered. During the winter months protect them in the frames with sashes and a little straw shaken over the glass. It is better to have the ground frozen about an inch

deep before covering at all, then aim to keep it frozen till February or March. So long as the ground is frozen we need not uncover or ventilate in winter.

Apart from blooming them in frames, we can use them effectively in out-door gardens. As soon as the frost is out of the ground lift the plants from the frames and plant them out in beds, borders or elsewhere in the garden in the same way as Crown Anemones, Forget-me-nots, Daisies and Pansies, and they grow and bloom beautifully. In this way they are extensively used in the Boston gardens.

William Falconer.

Viola cucullata.—We all admire the common blue Violets, so vigorous and abundant in bloom in moist meadows and rich woods in April and May, but it should be more generally known that they are excellent garden plants. They live and thrive in garden borders year after year, and that too in open sunny places, quite unlike the situations in which we usually find the wild plants. And like most other wild plants that enjoy a place in the garden, where they bloom more abundantly and form larger plants than in the meadow or wood. Besides the many shades of blue we find in this Violet, we have forms with pure white flowers and others variegated with white, and the two last are the favorites in gardens. In the woods and meadows hereabout, and between here and Oyster Bay, the variegated varieties are found in the greatest abundance, and the markings differ in almost every plant, indeed among these wild plants are more beautifully variegated forms than are ever seen in cultivation. Among the wild plants, too, are a great variety of cut-leaved forms, but these, for garden purposes, are less desirable than are the simple leaved ones. We have these Violets in full bloom now in our garden borders, and they are lovely companions of Siberian Columbine, Moss Pink, Virginia Lungwort, Golden Alyssum (*A. saxatile*), Siberian Corydalis (*C. nobilis*) and other beautiful seasonable flowers. If amateurs will now go into the meadows and dig up some clumps of these Violets, plant them in their gardens, and give them abundance of water for a month to come, they will soon be established and take care of themselves, and next spring repay this kindness with a profusion of blossoms. In digging up wild plants dig deep, and secure as many roots as possible; the mat of sod around the neck of the plants is only grass roots, the Violet roots go deeper than these. Never let them wilt between digging and planting. *W. F.*

Tulipa Kaufmanniana is another of the fine Tulips discovered by Dr. Albert Regel in central Asia. It is a native of the mountains which rise above the valley of the river Tschirtschik and has lately been introduced into cultivation through the St. Petersburg Garden. It is allied to *T. Gesneriana*, and like that species is variable in the color of the flower, which ranges from different shades of red and yellow to white. In the form which Dr. Regel considers the type and has named *alboviriegata*, the segments of the flower are a bright rosy carmine on the outside, delicately streaked with white on their interior face, the claw brightly flushed with orange yellow within and less conspicuously marked with the same color on the outside, this marking on the outside of the outer series being reduced to a pale straw colored blotch. The leaves are oblong-lanceolate, five or six inches long by an inch broad, smooth and glaucous. The stem is about one foot high, and bears a single flower, an inch and a half to two inches long. It springs from a small ovoid bulb an inch in diameter, with brown membranous tunics slightly pubescent on the inside. *Tulipa Kaufmanniana*, var. *albo-variegata*, is a handsome and very hardy and desirable garden plant, flowering among the very earliest of the Tulips. It demands no special cultivation or care, and increases rapidly. *C.*

Boston.

Cereus grandiflorus.—We have a large plant of this grand species growing in a rose-house, where it blooms lavishly every year, usually in May. In the event of bright warm weather the flowers open about sundown, but in the case of dull weather it is generally dark before they expand. According to the weather and the condition of the buds we can tell, a day or two ahead, the night when the flowers will open, and acting on this, can in the forenoon cut off the buds, which if left uncut would bloom that night, and send them to our friends. These buds will open and exhale their delicious fragrance nearly as well as they would if they had been left on the plant. The flower buds before they open have no fragrance; after opening, while they are somewhat fragrant all the time, their powerful odor is so intermittent—that is, it comes in puffs, as it were. *F.*

Rose Princess Beatrice.—I consider this new Tea Rose among the most charming of all Roses, and finer blooms could not be grown in the height of summer than those now seen here. The form of the flower is exquisite, the petals broad and of thick substance, and recurved in the same pleasing way as in La France. The color of outer petals is pale primrose, which towards the centre deepens into a warm apricot. The scent is strong and the foliage broad, of a luxuriant deep green, which contrasts with the ruddy-tinged twigs and leaf stalks. It is evidently first-rate for forcing into early bloom. I call it new because it is not much grown yet, though Mr. Bennett, who raised it, obtained a first-class certificate for it from the R. H. S. in June, 1885.

Odontoglossum Harryanum.—There is quite a flutter among the orchidists about London in regard to this new Orchid since it has been rumored that some extraordinary varieties have been flowered, and others are likely to crop up. Mr. Harry Veitch has in flower a wonderful variety received from one of his correspondents. It measured nearly four inches from top of dorsal sepal to tip of labellum. The broad petals and sepals were of a peculiar shade of olive green and bronze, while the broad labellum was pure white, adorned with blotches and pencilings of a bright carmine. It is a long time since I saw an Orchid that captivated me by its beauty so much as this flower, and I know no other Orchid to compare with it.

W. G.

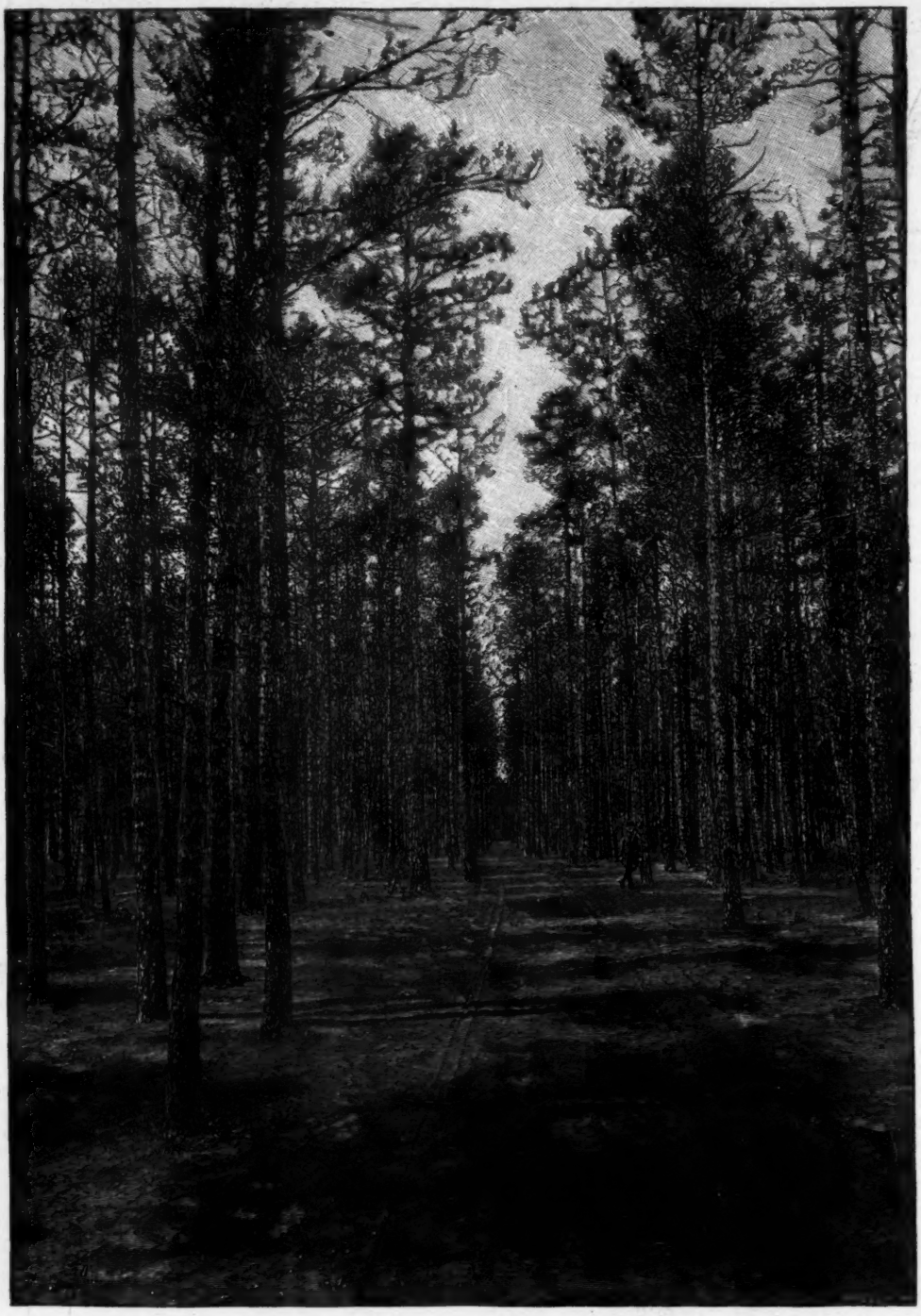
The Rock Garden in Spring.

THE handsomest flower in the Rock Garden this week is the Turkestan *Tulipa Greigi*, one of the most showy of all the Tulips. It is a dwarf species, bearing four glaucous-green leaves, of which the two lower are oblong-acute, five or six inches long by two and a half wide, the two upper narrowly lanceolate. They are conspicuously marked on the upper side with numerous oblong and linear bright chestnut-brown blotches, and are undulated on the margins. The stout, downy flower-stem is rarely more than two or three inches high. It bears a single campanulate flower, three to four inches deep, the segments spreading abruptly above the middle when fully expanded. The upper portion of the segments are bright crimson within, the lower third occupied by a large black blotch, surrounded by a distinct yellow border. This splendid plant, although apparently perfectly hardy, is a failure here in cultivation. Imported bulbs flower finely the first year after planting, but then gradually diminish and finally disappear. It is possible that they might give better results if they were lifted and replanted every year. Much more satisfactory, although a less showy plant, is *Tulipa Oculis-solis*, a native of Southern Europe, and for centuries known in gardens. It has three or four light glaucous leaves, a rather tall flower-stem and very handsome campanulate flowers, with acute, deep-scarlet-colored segments, two to three inches long, and, like those of *T. Greigi*, conspicuously marked on the inner side with a large black blotch surrounded with a yellow margin. This is one of the most beautiful of the perfectly hardy Tulips which can be grown here.

Several Fritillarias are now in flower. The Guinea-hen flower (*F. Meleagris*), a widely distributed European plant from Great Britain and Norway to the Caucasus, with large, pendulous, bell-shaped solitary flowers, checkered with dark purple, and borne on slender leafy stems a foot high, is an excellent and very hardy plant here, although now too rarely seen except in very old-fashioned gardens. It is a useful plant, too, for naturalizing along wood-walks and in other wild parts of the garden. There is a variety with dull-white flowers.

A handsome and very distinct hardy species is *Fritillaria pallidiflora*, introduced a few years ago from southern Siberia. It has large pale yellow, nodding, campanulate flowers conspicuously marked on the inside of the segments with small purple spots, and numerous glaucous-blue, lanceolate leaves. It is a vigorous and valuable plant, eight to ten inches high, and is now blooming in the same spot where it has stood undisturbed during the last five or six years. Every one who has ever been in a garden knows the stately old Crown Imperial (*Fritillaria imperialis*), with its whorl of red-brown, drooping flowers at the top of the tall leafy stems. It is a native of Persia, and has been cultivated in gardens during nearly three centuries. There is a variety (var. *lutea*), however, with clear yellow flowers which is rarely seen, in this country at least, although far more beautiful than the old-fashioned variety. It deserves more attention than it has received here.

The Summer Snowflake (*Leucoium æstivum*) is in bloom. It is a very hardy bulbous plant, a native of central and



A New Jersey Pine Forest.—See Page 166.

southern Europe, and one of the handsomest and most satisfactory plants of its class in the rockery. It has dark green, linear, obtuse leaves, one to two feet long, and tall slender scapes, bearing at the summit a cluster of four to eight pure white, nodding, bell-shaped flowers, nearly one inch long, the tips of the segments marked on both sides with a green blotch. The Summer Snowflake will thrive in ordinary garden soil. The deep blue and the white flowered varieties of the Grape Hyacinth (*Muscari botryoides*) are in bloom. They are hardy little bulbous plants, from central Europe, with very short, dense racemes of small, nodding, bell-shaped flowers, and linear, erect, glaucous leaves. They are well suited for the wilder parts of the rockery, and for naturalizing along the margins of woods and wood-walks.

Several native plants now in bloom are worth mention as interesting inhabitants of the rock-garden. The Moss Pink (*Phlox subulata*), a conspicuous feature in early spring on rocky hills in some parts of New Jersey, is common and well known in gardens; but *Phlox reptans* is seen more rarely. It is a dwarf species, with long and prostrate, creeping, runner-like stems, sending up low flower-stems, six to eight inches high, bearing a few-flowered cyme of handsome reddish

purple, long-tubed flowers, nearly an inch across. It is a native of damp woods along the Alleghany Mountains from Pennsylvania to Kentucky and Georgia. It is a hardy and desirable plant in cultivation, flourishing alike in shade and in full exposure to the sun, forming a dense, carpet-like mat. It is a good plant to use in covering the ground among shrubs in the rock garden, and is very easily increased by division.

The Twin-leaf (*Jeffersonia diphylla*) is a perennial, glabrous herb of the Barberry family. It sends up in early spring long, petioled leaves, divided into two half-ovate leaflets and naked one-flowered scapes. The handsome flowers are white, about an inch across, and are composed of four deciduous sepals, eight oblong, flat sepals, eight stamens, a two-lobed stigma, and an ovoid, pointed ovary. The pear-shaped pod opens horizontally near the middle, the upper part making a sort of lid. The Twin-leaf is an inhabitant of rich woods from western New York to Wisconsin and southward. It is attractive in foliage as well as in flower, and will flourish in any garden border. It is easily increased from seed, and by the division of the matted, fibrous roots. The genus *Jeffersonia*, of which a second species occurs in Manchuria, was named by Dr. Barton in honor of Thomas Jefferson.

The Mitre-wort (*Mitella diphylla*) is a common inhabitant of northern and western woods, where it is found in upland situations in deep rich soil. A mass of this graceful little plant is a pretty object in the shadiest part of the rock garden, where it throws up its tall, slender racemes of small, white flowers, before the leaves on the over-hanging trees appear. It has hairy, acute, heart-shaped, lobed and toothed, pale yellow-green leaves. The slender scape bears near the middle a single pair of small, opposite, sessile, acute leaves—a character from which the specific name of this species is derived. The Purple Trillium is a less showy and less attractive plant than *Trillium grandiflorum*, referred to in the last issue, but it is worth a place in the shaded rockery for the peculiar deep, dark, dull-purple color of the large flowers. It is a very common plant in rich woods, especially at the north.

The Canadian Violet (*Viola Canadensis*) deserves a place in every garden. It is a beautiful plant, with leafy stems, one or sometimes even two feet high and with white flowers tinged with violet. It is common in northern woods and on the Alleghany Mountains, and takes kindly to cultivation, springing up from self-sown seed in the shade and in the most sunny and exposed parts of the garden.

Boston, May 13th. *C.*

Notes From the Arnold Arboretum.

Ribes saxatile is the earliest of the Currants in flower. It was the first shrub in the Arboretum to unfold its leaves. A native of Siberia and long known to botanists, it is not often found in gardens. *R. saxatile* is a very distinct, hardy, free-blooming shrub, two or three feet high, with erect branches covered with scaly reddish bark, and leaves, when the plant is in flower, of a delicate pale yellow-green color. The small yellow flowers are produced in short erect racemes. The fruit is small, spherical, bright red, acid and hardly edible.

Ribes alpinum, a red-fruited Currant common in the elevated deciduous forests of northern and central Europe, and of Russian Asia, where it sometimes forms a dense undergrowth, blooms here a few days later. It is a dwarf unarmed shrub, two to three feet high, with broadly ovate, serrate, lobed leaves and erect glandular-pubescent racemes of small flowers and large, handsome scarlet insipid fruit. This plant from a horticultural point of view possesses little interest except in the fact that it is one of the few hardy shrubs that will flourish under trees in a comparatively dense shade.

Two species of *Ribes* from our northern woods are also in flower—*R. rotundifolium*, with smooth or sometimes downy, round, heart-shaped, lobed leaves, slender peduncles, each bearing 1 to 3 small greenish flowers, and small unarmed fruit of agreeable flavor. The second species is the Fetid Currant (*R. prostratum*), with long, prostrate, unarmed stems trailing over the ground, deeply heart-shaped, lobed, doubly serrate leaves, and small greenish flowers borne in slender erect racemes. The pale red fruit is glandular bristly. The habit of this plant would give it a considerable garden value, in spite of the disagreeable odor it emits when bruised, were it not for the fact that when removed from its home in cold damp woods to more exposed and sunny situations, its leaves become disfigured by a fungus early in the season and often drop by midsummer.

Ribes aureum, the Buffalo or Missouri Currant, of which several garden forms of no special interest are now cultivated, is in flower. It is a tall, glabrous, unarmed and very hardy shrub, 6 to 8 feet high, common from western Missouri to Oregon, with three-lobed leaves and bright golden-yellow flowers in many-flowered racemes. The yellow fruit, which turns brown or nearly black when fully ripe, has a pleasant but rather insipid flavor. This is one of the hardiest and most easily grown of all shrubs; it will thrive in poor, sterile soil and under the shade of trees; situations where it is often difficult to make shrubs flourish. But the handsomest species of the collection and perhaps the handsomest of the genus is *Ribes sanguineum*, a native of Oregon and northern California, where it is common on the rocky banks of streams. Like nearly all the woody plants from that region it is not thoroughly hardy in New England, and must be carefully covered to protect the flowering wood. It is an unarmed shrub 4 to 8 feet high, with heart-shaped, five-lobed, serrate leaves and long drooping racemes of deep rose-colored flowers in the axils of large red bracts. The fruit is sub-globose, glandular, hirsute and unedible. Several varieties of some horticultural interest have originated in gardens, of which the most distinct are the var. *atrorubens*, with smooth, deeper colored flowers, and the var. *malvaceum* (*R. malvaceum*), with leaves hispid above, covered below with white tomentum.

Two Bush Honeysuckles (*Xylosteon*) of our North Atlantic Flora, *Lonicera cileata* and *L. cærulea*, are flowering. The former is a delicate and pretty shrub, which inhabits rocky woods from Massachusetts to Wisconsin and far northward. It sometimes attains a height of 5 feet, with erect or straggling branches, oblong-ovate leaves on slender petioles and rather large greenish-yellow flowers, produced in pairs on long single, axillary peduncles. The berries are red. *L. cærulea* is a dwarfer plant rarely exceeding two feet in height; it is found in bogs from Rhode Island to Wisconsin and northward. It has oval leaves, pubescent when young, pale yellow flowers on short peduncles, their ovules later united into a single large, handsome, blue fruit. The two species take kindly to cultivation and are not particular about soil or exposure. They are interesting additions to any collection of shrubs.

Ostryopsis Davidiana is blooming in the Arboretum for the first time. It is the only representative of a genus of the *Cupuliferæ*, closely allied to the Hazels; indeed some authors have included it in that genus, from which it is distinguished by its female inflorescence. This is a small ament, terminal upon the branches of the year, composed of ovate, leafy, two-flowered bracts, each flower enclosed in a leafy, coriaceous, lobed involucel, split on the ventral side, and in a tubular membranaceous exterior involucre toothed at the summit and analogous to the leafy covering of the hazel nut. The fruit, borne in clusters of six or eight at the extremities of the branches, is dry and indehiscent, and is enveloped in the persistent, striated, pubescent involucre. The nut is conical, obtuse at the summit, about half an inch long and crowned with the persistent stigmas. The male flowers, which are similar to those of the Hazel, are produced from the wood of the previous year. *O. Davidiana* is a graceful and perfectly hardy shrub, two or three feet high, with alternate, ovate-cordate, sub-acuminate leaves, pubescent on the under side. It is a native of Mongolia, where it was discovered by the Abbé David, and of the mountains in the neighborhood of Pekin. It grows freely in any garden soil and requires no special cultivation or care. A beautiful figure (*t.* 3) was included by M. Lavallée in his "*Arboretum Segrezianum*."

Corylopsis pauciflora, now in bloom, is a native of Japan and a member of the Witch-hazel family. It is a dwarf deciduous shrub two or three feet high, with short pendulous racemes of yellow flowers, which appear before the leaves in the axils of large sheathing bracts, and which in structure resemble those of the Witch-hazel. This is a very compact, handsome plant of real ornamental value, which should be seen more often in gardens.

Two hardy Apricots are in bloom—a wild form of *Prunus Armeniaca*, the original of the cultivated Apricot, found by Dr. Bretschneider on the mountains near Pekin, and common in northern China and Mongolia—a handsome erect shrub three or four feet high, of which there are two specimens in the Arboretum, one with pale pink, the other with nearly pure white flowers, which precede the rounded, sub-cordate, abruptly acuminate, serrate leaves, and small yellow or red, thin-fleshed, edible fruit. The second is the Siberian Apricot, which botanists now consider a geographical variety of the last. It is a taller plant, sometimes 20 feet in height, with a much lighter colored bark, and stouter branches, which are covered with pure white or pale pink flowers, preceding the ovate-acuminate leaves borne on eglandular petals, and small,

scarcely edible fruit. It is a common Siberian tree, extending through northern China to Manchuria. It is very hardy here and exceedingly ornamental when in bloom. Another Prunus from the mountains near Pekin is now in flower in the Arboretum for the first time. Dr. Bretschneider considered this the wild single-flowered form of the well known flowering Almond (*Prunus [Amygdalopsis] triloba*), so common in gardens and one of the most beautiful of all early spring flowering shrubs. The Pekin plant produces in great profusion large pink solitary single flowers on its naked branches; and apart from its great botanical interest is a handsome and very hardy shrub, well worth cultivation. Its habit, its bark and foliage appear identical with the double-flowered plant.

Prunus Simonii, which Maximowicz, in his monograph of the species of the genus *Prunus* of Eastern Asia, considers the wild type of the Nectarine (*Prunus Persica nectarina*) is in flower. It is a dwarf tree, with erect branches covered, as well as the stem, with light gray warty bark. The leaves are oval, elliptical, denticulate and borne on short petioles; they are preceded by small white flowers, with oval, unguiculate petals and pubescent ovaries. The fruit has the grooved stone of a Peach and the smooth skin of a Plum. It is a handsome brick red, depressed-globular, and with a depression in the upper and lower sides. The flesh, which adheres to the stone, is yellow, rather juicy, although austere. It is not large, hardly exceeding an inch or an inch and a half in diameter, but doubtless might be greatly improved by cultivation. *Prunus Simonii* is a native of China, where, as well as in Japan, it is often found in gardens. Here it forms a small and perfectly hardy tree, with a strict pyramidal habit. Its resemblance to the cultivated Nectarine is interesting, and might be taken advantage of by pomologists to establish a new race of hardy Nectarines capable of supporting the extremes of our northern climate.

May 12th. *J.*

The Forest.

A New Jersey Pine Forest.

THE illustration upon page 164 represents a pure forest of Pitch Pine (*Pinus rigida*) in Ocean County, New Jersey. It is situated about twelve miles from the sea coast, and forms a part of the extensive and interesting domain which surrounds the Laurel House at Lakewood, to the proprietors of which establishment it belongs.

This forest is interesting from several points of view. It is extremely picturesque and beautiful. It occupies ground which only fifty years ago was employed for farming purposes; and it is one of few forests composed of a single species of tree which can be seen in the Northern States, where a number of different trees are usually associated together in forest growth. The Pines in this Lakewood forest have an average height of fifty feet; and their trunks an average diameter of ten inches. They stand so close together that grasses and undershrubs cannot survive in their dense unbroken shade. The forest floor is deeply carpeted with moss, however, and altogether this forest reminds one more of one of the planted Pine forests of northern Europe than anything we remember to have seen before in the United States. The rapid and vigorous growth of this young forest upon poor and comparatively worthless lands shows, moreover—and this is its chief interest—the way such lands along the Atlantic seaboard, north of Virginia, can be used to the best advantage. And finally it illustrates the possibility of protecting, by means of a little trouble and foresight, such forests from burning up in the fires which annually rage, unchecked, over great tracts in the New Jersey coast region.

The Pitch Pine springs up spontaneously on the sandy soil which adjoins the coast from Massachusetts Bay to the capes of Virginia. Land which has once been tilled and then abandoned again to nature, in all this region is soon covered with a dense and almost impenetrable mass of young Pitch Pines, which if fire is kept away from them soon grow into a valuable forest. If the young Pines do not appear spontaneously the seed can be sown, at a very trifling expense, and with entire assurance of an abundant crop. The seed of no other Pine, of no other tree, indeed, sown in the open ground, germinates with such certainty, as the farmers in some of the towns on Cape Cod have shown; and there is no other tree which can be grown so cheaply on these barren, sandy soils. or give better results in so short a time. And could the people of New Jersey be induced to follow the example of the owners of the Lakewood forests, and protect and encourage the young Pines which are struggling to obtain possession of much of the lower part of the State, its wealth and prosperity might be very considerably augmented.

The Pitch Pine is not one of the most valuable Pine trees of the United States. Its wood is coarse grained, full of resin, and not very strong. It is in every way inferior to the wood of the southern Long-leafed Pine, which it resembles in structure and general appearance, but which it will never replace as long as the southern Pine forests continue to yield as freely as they do at present. But the time will come, perhaps, when New Jersey pitch pine will play an important rôle in supplying the people of the United States with timber. The southern pine cannot last forever, under the existing management of these forests, and the species which is everywhere replacing it, the Old Field or Loblolly Pine (*P. Tæda*), is inferior to the northern Pitch Pine in the quality of the timber it produces. Before southern pine was brought to this market the pitch pine of New Jersey was the only available material in many parts of the State for timbers and flooring; and there are still houses in some counties where floors and floor-timbers are known to have been in constant use for more than a century. But it is for firewood and for charcoal that the pitch pine is most valuable; and the nearness and accessibility of these New Jersey Pine forests to great centres of population give them special importance as sources of fuel supply, which no other forests of this character in the country possess. Much land within three or four hours by rail of this city and of Philadelphia, now utterly unproductive and rapidly deteriorating through the fires which sweep over it every year, can be made highly productive and profitable by means of the Pitch Pine. People who own land of this character will see much to interest and instruct them in these Lakewood forests, and in those in the town of Orleans, on Cape Cod, in Massachusetts.

C. S. S.

Correspondence.

To the Editor of Garden and Forest:

Sir.—May I be allowed to say a word in defense of the Norway Spruce, which lately seems to have had the axe laid at its roots rather unmercifully?

It is quite easy to understand how it originally found foothold among us, because while young its habits and color appeared to be good, its native climate corresponded fairly well with our own, it could be imported at trifling cost, and was, for quite a long time, a well recognized favorite in landscape effect. To-day we see all over the older settled portions of the country a great many forlorn, weary looking trees that it would be a kindness to remove altogether. They are denounced as failures, and certainly we share the general opinion in asking for their extirpation. But we must emphatically resist the seemingly general verdict that the Norway Spruce is worthless for our planting purposes. On the contrary, there is not to-day one single evergreen that, under proper conditions, offers more inducements to the landscape gardener. Let me state these conditions briefly and you may judge for yourselves.

It is desired to establish a low evergreen hedge, of uniform color, dense habit, inexpensive and reasonably hardy. These are the essentials in a good hedge of this description, and for these good qualities, the Norway Spruce still compels your respectful attention. The Hemlock (*Tsuga Canadensis*) is handsomer, but it will not stand the hardships of our foreign friend. The Rocky Mountain Spruce (*Picea pungens*) is stiffer and probably more hardy, but not uniform in color. Even our White Spruce (*Picea alba*) is off color as compared with the Norway, though as a grown tree it is far superior.

Please bear in mind that our hedge is to be well planted in good soil, well trimmed each year, and never suffered in any way to deteriorate, so far as skillful maintenance can pre-

vent it. Under these conditions the Norway Spruce is ready to disarm criticism and challenge admiration.

Again, the Austrian and Scotch Pines are both excellent trees for a first establishment of wind-break in exposed situations, and any wholesale condemnation of them shows only a lack of knowledge as to their best possibilities. On the other hand, while the Douglas Fir appears in every way a most promising tree for our Eastern climate, it is proving a little too much on the part of "Strobus" when he calls attention to its remarkably handsome record in England. If this record proves anything it certainly goes to show that it is better adapted to the English climate than to ours, as we very rarely find the same tree doing equally well in England and New England.

In closing, let me state frankly that American trees are, for general use, far more valuable than foreign ones, but we should be very sorry to give up our acquaintance with many old favorites from across the water, especially as we are just beginning to find out exactly what their real value is likely to be to us here in the future.

Boston, Mass. *J. H. Bowditch.*

[The Norway Spruce is unquestionably one of the very best Conifers which can be used in the Northern States to make a hedge. It grows rapidly, is very uniform in color, as our correspondent points out, and bears the shears well. The White Pine, too, makes an excellent and very hardy hedge; and with a little care in selection, plants of the White and of the Colorado Spruces could be found of uniform color. The last has probably never been tried as a hedge-plant. Its hardiness, rigidity, pleasing color and pungent foliage seem to adapt it admirably for this purpose. It would not be surprising if the Douglas Fir should succeed equally well in England and in New England, although it is perfectly true that the same tree rarely does equally well in western Europe and eastern North America. Few trees flourish under such widely different climatic conditions as the Douglas Fir. It grows on the North-west Coast in a mild climate, where the annual rain-fall is between sixty and seventy inches, and on the dry eastern slopes of the Rocky Mountains of Colorado and New Mexico, where the cold is intense and the rain-fall is often less than twenty inches. The plants which grace the plantations of Great Britain are of Oregon and Californian origin. Those which now promise so well in our North Atlantic States are all from seed collected in Colorado.—ED.]

Recent Publications.

Report upon the Forests of Honduras. By E. D. M. Hooper. London, 1887.

This is the last of a series of reports upon the forests of the British possessions in Tropical America, including those of Jamaica, of St. Vincent, of Grenada and Carriacou and of St. Lucia, made by Mr. Hooper, a trained officer of the Indian Forest Department detailed for this duty.

British Honduras owes its existence as a Colony to the value of its forests, and for two centuries the cutting and exportation first of logwood and then of mahogany has practically been the only occupation and the sole source of revenue of its people. The best logwood was used up years ago, and it no longer pays to export it; and the mahogany trade does not appear to be in a very flourishing condition. The large trees near the streams have been cut, and none remain except in remote and often almost inaccessible parts of the Colony. The government is now, however, fully roused to the importance of protecting the mahogany in the forests and has adopted stringent regulations controlling the cutting of these trees upon the public domain. Mr. Hooper recommends the organization of a forest establishment and the appointment of forest inspectors to regulate the cutting of Mahogany trees, the location of forest roads and the planting and care of valuable timber and rubber trees; and in view of the importance of the timber industry of the Colony his recommendations certainly should be adopted.

The forests of British Honduras, so far as their composition is concerned, can be grouped in two distinct divisions—the Pine forests of the coast and of the "Broken Ridges" of the interior and the low-land hard-wood forests which cover the rest of the Colony. The tree which occupies almost exclusively the dry gravelly soil of the broken ridges is the *Pinus Cubensis*, a species which finds the northern limits of its distribution in South Carolina, and is common on our Gulf Coast east of the Mississippi. It is a very valuable timber tree; and it is not impossible that these Pine forests of Central America may become a considerable factor in the lumber supply of the world. The most important of them occupies "the Pine Ridge South of the Cayo stretching away south to an unknown distance and westward into Guatemala. Its area cannot even be guessed. And generally Pine forests may be said to occupy such land in the Colony as is raised above the general level of the country." Of the character of these Pine forests Mr. Hooper says: "Except in the narrow valleys, the forest of *Pinus Cubensis* may be considered a fine one. I counted 101 trees in a fairly average acre. The growth is tall and straight, but it is slow, a cut tree showing 60 rings in a radius of 6.6 inches at four feet from the ground, and at this point the bark was 1¼ inches thick. A tree of 15 inches in diameter measured 75 feet in length to the branching and had a total length of 114 feet, while a tree 10 inches in diameter was 67 feet in length." The timber was found to be of excellent quality and hardly inferior to that of our Southern Pine, which it much resembles. The second division of the Honduras forests, that covering the general level of the country where the soil is deep and rich, is far more valuable and extensive. It consists of hard-wood trees. "This forest," says Mr. Hooper, "is difficult to describe." It is a majestic admixture of graceful trees of towering height with an undergrowth of all sizes—from small seedlings to large poles. The soil, which is of the richest loam, is carpeted with a thick growth of small palms, club-mosses and ferns, emerging from which is a small tree growth forming so thick an intermediate stage between the ground and the summits of the majestic trees that the latter can be recognized only from their bark displayed on a level with the beholder. Over the smaller trunks are festooned long garlands of Vanilla and other root Orchids, while parasites, with the most fragrant masses of flower, are clustered on every branch, interspersed with clumps of Bromelias and similar growths. The intermediate growth is composed in great measure of the Cohune palm (*Attalea*) and from its presence in quantity the type of forest takes its name. Its distribution is affected by the near presence of running water, for it often monopolizes the banks of rivers and is not so generally represented further away. It is found vegetating in clumps, small and large together—trees having as yet no stalk healthily growing associated with parent stems over which are masses of thick woody creepers, and were it not for the compactness of the growth giving material support, numbers of trees would be brought down by the weight of these climbers. The tree itself grows solidly even when in the open, it seems but little affected by wind and in this respect resembles Pine trees in being elastic. The tall tree growth which towers over the general forest includes Mahogany, hitherto the most important tree in Honduras, its export having been at all times the staple trade of the Colony. It is found in some less accessible parts in a state of natural distribution—that is to say, trees of all sizes and age in proximity to one another. Unfortunately this is seldom seen in the parts of the country which are within reach of the cutter. In other places where it has been, it is found no longer, the species being cut out and even seedlings are not present. Finally, in parts we see the young Mahogany, which is as yet in comparative infancy and has not pushed its head through the canopy of the older untouched trees; but should the demand for the undersized wood continue it is certain that, with the multiplicity of small mahogany merchants with little or no capital, this will also disappear and the Cohune forest within easy reach of streams will be without Mahogany. Apart from its appearance on Cohune ridge, I would add that the distribution of this species is general except on Pine ridge and the poorer broken ridges and Logwood swamps. Elsewhere it is common, whether in hills or in valleys, on rocky soils or deep loams." Mahogany is not the only valuable timber which these forests contain. Mr. Hooper in an appendix to his instructive report enumerates no less than 50 others of commercial importance, which when better known in Europe will greatly increase the revenue of the Colony. The fact that only 15 of these have been determined botanically during all the years that Honduras has been occupied by Europeans, shows the difficulty which attends the study of trees in the high, dense forests of Tropical America, and the field for investigation these forests offer to the ambitious and energetic botanical explorer.

Periodical Literature.

Writing of the "Spring Flowers of California" in the April number of the *Overland Monthly*, Mr. Charles Howard Shinn excites the envy of Eastern readers. February in California, he says, corresponds to the "changeful, sweet and coquettish" April of the English poets, and April in California means "the first radiancy of the full Rose garden, the farewell of the scarlet Quince and the purple Lilacs." And among the wild flowers it means a profusion of blossoms, many of them identical in name with our own early summer species, but different in form and often much more brilliant, which contrasts very strongly with the humble efforts that the Eastern States make in this month to adorn themselves. No one, writes Mr. Shinn, who sees California for the first time now, can imagine how much more beautiful it was in the days of the pioneers, before "herds of cattle and bands of sheep trampled the soil and destroyed Nature's great wild garden," now "seas of flowers" have been exterminated, "leagues of wild Oats, Mustard fields in which, when in bloom, men on horseback could lose themselves, wild Lilies bedded in mass extending for rods. . . . Wild flowers that forty years ago spread in broad carpets from mountain to mountain across great valleys have retreated to bits of rock and ravine; to sunny hill-pastures and warm Oak-openings not yet needed for vineyard and orchard." Yet, we repeat, his account of what still remains suggests delights which may well make us envious.

Recent Plant Portraits.

ODONTOGLOSSUM URO-SKINNERI, *Le Moniteur d'Horticulture*, February.

EUCALYPTUS UINIGERA, *Gardener's Chronicle*, April 14th; from a tree grown in Scotland and now more than sixty feet in height. This is believed to be the hardiest of the genus. It is a native of the Tasmanian Mountains; and "may become," says Baron Von Mueller, "of sanitary importance to colder countries in malarial regions, the foliage being much imbued with antiseptic oil." This species attains a height of 150 feet, with a trunk circumference of eighteen.

ANTHURIUM CHAMBERLAINI, *Gardener's Chronicle*, April 14th; "one of the noblest species in a genus already rich in superb species, and handsome alike in foliage and in flower." It is supposed to be a native of Venezuela; and it has immense cordate leaves, three feet long and two feet wide, and "thick boat-shaped spathes about eight to nine inches long and four wide . . . of a pale, dull puce color externally, shining and rich deep crimson colored internally, bordered by a very narrow line of ivory-white, edged in turn by a narrow margin of yellow." The red-purple spadix is raised on an ivory-white stalk.

PEAR, BELLE PICARDE, *Revue Horticole*, April 1st.

MACARANGA PORTEANA, *Revue Horticole*, April 16th. A striking looking Euphorbiaceous tree, with bold, very large, ornamental foliage, introduced into the *Museum d'Histoire Naturelle*, from the Philippine Islands by the French botanical traveler, Marius Porte, to whom gardens are indebted also for *Phalænopsis Schilleriana, Phalænopsis Luddemanniana, Cycas Riuminiana* and many other interesting plants.

PHŒNIX CANARIENSIS, *Revue Horticole*, April 16th. A hardy and very graceful Palm, now very generally cultivated in the gardens of southern Europe. It is one of the best house plants, and may be expected to thrive in any part of the United States where the Orange is hardy.

Notes.

The interest now felt in American horticulture, and in some of our large collections of plants, especially of Orchids, in England, is shown by the fact that the supplement of a recent issue of the *Gardener's Chronicle*, of London, is devoted to a view of Mr. W. S. Kimball's collection of flowering plants of *Cypripedium insigne*, which contained, when this picture was made, not less than two thousand blooms, and must have presented a marvelous spectacle.

The entire stock of the remarkable white Chrysanthemum, Mrs. Alpheus Hardy—widely known by the striking illustration in the first number of this journal—has been purchased by W. A. Manda, of Cambridge, Mass. The price paid was $1,500, the largest amount ever given for a Chrysanthemum, at least in this country. The flower was exhibited for the first time at the Chrysanthemum Show in Boston last December.

Mr. Thomas H. Douglas, a son of Mr. Robert Douglas, of Illinois, has been appointed by the Board of Forestry of California, Head Forester of that State. Mr. Douglas has already established extensive nurseries and trial grounds at Chico, Santa Monica and Hesperia. A map of the State showing the extent and character of the timber in the different counties is being prepared, and active operations looking to the arrest and punishment of persons setting forest fires, or illegally cutting timber, have been inaugurated.

Retail Flower Markets.

NEW YORK, *May 25th.*

There is a fair supply of flowers, with few really choice Roses. There is small demand for elaborate designs, the orders for Decoration Day being mostly for plants for embellishing statues, and wreaths for graves. Branches of blossoming shrubs are mixed with Roses in the large baskets made up for farewell tokens sent to steamers. Anna de Diesbach Roses are the choicest of Hybrids this week, and after these, Baroness Rothschild. Selected flowers with long stems cost from $7.50 to $9 a dozen. The former price is charged for the average lot of Hybrids. American Beauty sells for $6 a dozen. Puritan Roses that are perfect are scarce and cost $4 and $5 a dozen. General Jacqueminots continue poor, and those grown in-doors are still declining; they cost from $2.50 to $4 a dozen. Moss Roses bring $4 a dozen. La France Roses are abundant, and generally of good quality; they cost $3 a dozen. Brides and Catherine Mermets cost $2 a dozen. Perles, Niphetos and Souvenir d'Un Ami cost from 75 cts. to $1 a dozen; Bon Silene from 50 cts. to 75 cts. a dozen. A few lingering Tulips of late flowering kinds are to be had for $1 a dozen. Lilies-of-the-Valley are 75 cts. a dozen; Callas, $2.50 a dozen; Poet's Narcissus from 50 cts. to 75 cts. a dozen, and Gardenias, $3 a dozen. Lilacs are very plentiful and inexpensive, a large bunch being sold for 5 cts, on the streets and in the city markets. A few Field Daisies appear from the south, bring 25 cts. a dozen. The yellow Paris Daisy costs 50 cts. a dozen; fine Mignonette brings 50 cts. a dozen; it is small but well tinted. A few Pœonies have appeared, which sell at fancy prices. Carnations are scarce, but handsome; they cost 25 and 50 cts. a dozen, the latter price being for Buttercup and Grace Wilder.

PHILADELPHIA, *May 25th.*

Cooler weather has again made flowers scarce, but it has also toned up the quality and the demand has been greater. These conditions have caused a trade which is brisk for the month of May. Many out-door flowers have passed their prime, and this has caused Roses to be more in demand, although no material change in prices has taken place since last quotations. Amongst wild flowers Buttercups and the native Violets are extensively used, especially for personal adornment, and Columbines are occasionally used for the same purpose. Tree Pœonies are being cut in limited quantities, and sell at $3 per dozen. They are decidedly coarse, but are useful in heavy decorations, and in the florists' windows they make an attractive display. Lily-of-the-Valley is still good, being cut out-of-doors; the foliage is thick and leathery in texture, and a dark rich green in color; very little is sold for less than $1 a dozen. The beautiful Moss Rose with pink flowers is offered in limited numbers at from 25 cts. to 50 cts. a spray. The wonder is why more of these exquisite flowers are not to be had, for they are eagerly bought at the prices named. The difference in price is due to the different number of buds on the sprays. Single Dahlias still hold firm at $3 a dozen, and Gladiolus is steady at the same price. Smilax, Asparagus and Adiantum are plentiful and fine in quality.

BOSTON, *May 25th.*

Bright weather has brought flowers in abundance and of better quality. The improvement is especially noticeable in Roses. Fine Jacqueminots and Madame Gabriel Luizets are in market, and are worth $4 a dozen. Mermet, La France, Bride and Perle all sell for about $2 a dozen. There is a fair supply of Papa Gontier coming in, and selling readily at $1.50 per dozen. Carnations are unchanged since last week. Violets have disappeared completely. Pansies are growing smaller. The only Lilies-of-the-Valley obtainable are grown out-of-doors. Narcissus will last but a few days longer, and Tulips are in their prime. White Stocks and *Spiræa Japonica* are worth $1 a dozen spikes. They are abundant, but probably not equal to the demand for Decoration Day. As this occasion approaches it becomes more and more evident that, owing to the backward season and the scarcity of out-door flowers, there will be a short supply in general, and prices will advance considerably. Among the brightest blossoms in the florists' windows are the Scarlet Nasturtiums, now quite abundant. They are sold in small bunches at 50 cts. a bunch. Cape Jessamines from the South have been sent here in small quantities this spring, but they do not seem to meet with the same favor with which they are regarded in other parts of the country. Hydrangea plants are very handsome just now, and there is a large trade in them. There will be an unusually large number of fashionable weddings next month. Some of the leading florists have already many orders in advance, and the prospects of the cut flower trade for the immediate future are good.